



MEETING MINUTES

Hanford Advisory Board (HAB, Board)

Tank Waste Committee (TWC)

October 5, 2022

Virtual Meeting via Microsoft Teams

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This is only a summary of issues and actions discussed at this meeting. It may not represent the fullness of represented ideas or opinions, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Opening

Mike Berkenbile, US Department of Energy (DOE), welcomed meeting participants and announced that this meeting was being held in accordance with the Federal Advisory Committee Act.

Ruth Nicholson, HAB Facilitator, discussed meeting room and online meeting logistics. She notified participants that the meeting was being recorded.

Rob Davis, City of Pasco and TWC chair, explained that he had been appointed as the temporary leader of the TWC following the departure of many committee members from the Board, which included the previous TWC chair. He hoped to attract new members to the committee, discuss the work the committee would pursue, and explore the issues that the meeting participants were interested, all through free-flowing conversation.

Draft Meeting Minute Approval

The April draft meeting minutes were approved, contingent on a correction in the footer of the document.

Announcements

Gary Younger, DOE, discussed the plans for a HAB member orientation on October 18, which would include the first “windshield” tour for the HAB in years. Both new and established HAB members were welcomed to attend. He provided expectations for the tour and instructions for reserving a place on the tour. DOE looked forward to showing off the progress made on site. Both primary and alternate members for each seat were being invited for the orientation. Though it was not typical, DOE was proving travel reimbursement both primary and alternate members for that meeting specifically. Ruth contributed, stating that the agenda and invitation for orientation was being distributed.

Rob asked if new members knew to expect those invites and Ruth explained that Susan Coleman, Public at Large, had been making personal phone calls to new members to welcome them to the Board and let them know what to expect. Susan confirmed that the new members were receiving HAB-related emails.

Tank Integrity and Monitoring Program

Erik Nelson, DOE, and Jason Gunter, Washington River Protection Solutions (WRPS), provided a presentation on the Tank Integrity and Monitoring Program. Erik explained that the presentation was intended to provide a general overview of the program.

He explained that the tank farms were located in the 200-West Area of the Hanford Site. The tanks consisted of 28 double-shell tanks (DST), up to 1.25 million gallons in capacity, and 149 single-shell tanks (SST), with capacities ranging from 55,000 to 1 million gallons. Most of the tanks were located underground. He explained that DSTs were different than SSTs in that they consisted of two layers of carbon steel, like a tank within a tank that provides a secondary containment. He reviewed a map of the tank locations.

Jason discussed the waste within the tanks, explaining that the waste consisted of dry waste in the form of saltcake and liquid waste, often located within the saltcake.

Susan Leckband, member of the public, asked about the estimated volume of liquid within the tanks. Jason confirmed that there was a documented estimate but did not have that figure readily available.

Jason discussed the SST integrity program, intended to support safe storage of waste until retrieval. The program comprised of structural analyses, integrity assessments, and monitoring. Inspections and monitoring were performed routinely, with full round of visual inspections having recently been

completed. Jason provided an explanation for the various monitoring tools, which included liquid observation by video, laser scanning, and liquid level measurement tools, and the situations in which each tool was best suited.

Similar inspections were performed for DSTs, however, as DSTs were in use for operations, with waste being transferred in and out, additional analysis was necessary. WRPS performed structural analysis, integrity assessments, waste chemistry evaluations, nondestructive examinations, and additional monitoring activities. He discussed some of the inspection tools that were unique to the DSTs, such as a robotic tank crawler that could fit into the space between the tank layers to measure tank thickness and look for evidence of corrosion or other defects.

Susan Leckband asked how the Tank Integrity Expert Panel was involved in the program. Jason explained that they were a team chartered by WRPS consisting of external experts from national laboratories and academia. WRPS met with a subgroup of the panel on a bi-weekly basis to discuss testing results and the full panel bi-annually to discuss inspection results, challenges, and other results. The panel provides feedback and recommendations through letters.

Steve Anderson, Grant and Franklin Counties, asked about the space beneath the internal tank, noting that the photos in the slide deck appeared that it was solid. Jason explained that the annulus itself was 30 inches wide, with 40 feet from the top of the tank to the floor. Through there was a concrete pad between the tank layers on the bottom, there were slots available for camera inspection. Jason described their configuration as a “tuning fork pattern,” with 64 slots around the perimeter of most of the tanks. He explained that using these spaces, ultrasonic testing was also performed to test the thickness of the steel.

Nina Menard, Washington State Department of Ecology (Ecology), asked for details on the core sampler shown within the slides. It was estimated to be about 15 feet tall and with all the equipment necessary to perform sampling on a mobile platform.

Dan Solitz, Oregon Hanford Cleanup Board, asked about the disposal path for samples. Jason explained that following testing at the on-site laboratory, the tested waste was returned to the tanks.

Chris Sutton, Public at Large, asked for details about the core samples taken. Jason explained that the cores were taken in 19-inch segments, potentially going downward through the 200 inches of waste depth. Through previous studies, waste was determined to be largely uniform horizontally across the tank, so there was little value in taking samples from multiple locations within the tank.

Tom Sicilia, Oregon Department of Energy, asked if there were milestones associated with the tank integrity and monitoring program. Jason stated that there were several within the Tri-Party Agreement (TPA) and provided some examples of completed milestones, including completing baseline visual inspection of all SSTs and creating the DST program overall. He felt that a lot had been accomplished in meeting those milestones.

Moving onward, Jason progressed through the slides. He discussed research and development of new technology that would be able to inspect the bottom of the tanks more effectively. The device was comparable to sonar and was presently being tested. DST repair methods were also being tested, such as cold spray testing.

He reviewed inspection tools that were presently in use within the program, which included various cameras for observing various parts of the tanks and crawlers intended for visual inspections or various measurements. Following, he reviewed photos of the various sampling and testing methods and tools.

Concluding the presentation, Erik and Jason stated that tank integrity and monitoring was a key component of the Hanford tank waste mission, which remained a priority for the Site. The tank integrity and monitoring program was dynamic, as it consistently addressed new information and implemented new technologies. The program was guided by the Tank Integrity Expert Panel, which provided independent guidance and recommendations for preventive and recovery actions.

Nina Menard thanked Erik and Jason for their presentation. She noted that Ecology got to attend the Tank Integrity Expert Panel meetings, which was appreciated. She noted that, in regard to TPA milestones, the requirements were included in the related Resource Conservation and Recovery Act (RCRA) permit.

Marissa Merker, Nez Perce Tribe, asked if any the technology used for repairing DSTs could be put to work for SSTs, and if not, were any similar technologies being developed. Jason explained that the repair that technology was designed to access DSTs within their secondary containment, which was not available in SSTs. There was not presently a method of repairing SSTs, however, there were technologies in very early stages of development to address that need.

Pam Larsen, Benton County, noted that she had the opportunity to listen to a Tank Integrity Expert Panel meeting in the past, which she found to be very informative. She asked if the HAB membership would be able to listen to those meetings. Jason stated that the HAB, Ecology, and the tribes were all invited to listed, and that it was a great means of learning about the tanks.

Rob Davis noted that a former HAB chair, Todd Martin, was the facilitator of the Tank Integrity Expert Panel and welcomed the HAB to attend the meetings and see the presentations. He noted that at the last panel meeting, there was discussion of out-of-compliance waste resulting in tank corrosion. He was interested to know if plans for bringing waste into compliance had progressed. Jason explained that the sampling and testing procedures have been made more stringent. The process consisted taking core samples to determine waste composition; testing and analysis to determine likelihood of corrosion, including more “aggressive” compositions than the sample; and making appropriate chemical composition to reduce the risk of corrosion. The methodology had been applied to three tanks to that point.

Rob stated, in the previous discussion of inspections, he heard that the tank was being looked at. He asked if the liner was being examined as well. Jason confirmed that both were examined, with the liner being visually inspected and examined through ultrasonic testing.

Rob noted that, if any TWC members are interested in attending the panel meetings, to let him know so that he could contact Todd Martin for details.

Rob posed a final question: how was the information learned from tanks that had failed being used? Jason explained that, when tanks failed, forensic examinations were performed to understand the failures. Much of the inspection and repair technologies discussed prior were a result of those evaluations. Additionally, core sampling had been improved to collect samples much closer to the bottom of the tank than was previously possible by implementation of a “syringe method.” The program was continuously expanding and improving based on data gathered and lessons learned.

Open Forum

Rob Davis explained that in review of the meeting minutes for TWC’s previous meeting, he found that there were many points of interest or questions raised that merited further exploration. As an example, he saw mention that a second Tank-Side Cesium Removal (TSCR) system was under consideration; the committee learned that there were certain resins that were able to handle iodine and technetium; and there

was mention of upgrades to the Direct-Feed Low-Activity Waste (DFLAW) facility, which could be items of interest or just compliance actions requiring little attention from the committee. Rob questioned if those should be delved into. He noted also noted that the Phoenix program was up and running, with the website listed in the meeting minutes (<https://phoenix.pnnl.gov>). He encouraged participants to look into it. He noted a mention of an “easter egg chart,” which served as a visual demonstration of tank contents and radioactivity levels.

Direct-Feed Low-Activity Waste

Susan Coleman noted that the upcoming full Board meeting included topics dedicated to DFLAW. She suggested that any related questions be routed through Gary Younger for that meeting.

Rob agreed and asked if there were other questions that participants had from the previous meeting minutes.

Chris Sutton noted that one item that could be discussed in regard to DFLAW was the monthly Consent Decree report. He stated that for the prior three months, DFLAW was behind schedule in certain activities and costing more than expected as issues were encountered. In response to a question in the Teams chat, Chris explained that those reports could be found through the Administrative Record (<https://pdw.hanford.gov>). To find them, one could search “Consent Decree Monthly Report” and set a filter for the current year.

Rob stated that Ecology issued a permit modification for DFLAW with many instrumentation changes and modifications. He wondered how that might factor into Chris’s question.

Tom Sicilia noted that the Oregon Hanford Cleanup Board recently attended a Hanford Site tour. While at DFLAW, he learned that the startup heaters were in the melter, with heat up expected by the end of that week. He hoped that the upcoming DFLAW briefing would include the status of the heat up.

Rob was interested to learn about the second TSCR option and what other alternatives were being considered, such as a modified TSCR.

Dan Solitz was interested to learn where the DFLAW project was in regard to training, management, retention, and crewing. He was also interested to learn if there was concern over solids making it through the TSCR resin, and if so, if there was concern over settling at the resulting product would sit in a tank for over a year.

Rob noted previous discussion on barriers for the tank farms. He was interested in how many of the tanks would be protected by barriers. Additionally, he was interested in if a reliability assessment had been performed on the evaporator, as it was expected to be in service for decades.

Concluding review of DFLAW-related questions and points of interest, Rob opened open forum for additional topics. He explained that during open forum, all members or interested meeting participants were encouraged to speak and discuss concerns or interests related to the tank waste project. He noted that it was likely that there was someone in the room that could assist in explanation, and if not, it could lead to new work for the committee.

Rob noted that for the committee, there were four Issue Manager (IM) groups that had been formed in the past. He suggested reviewing the status of those groups.

In regard to the IM team for grout, Susan Coleman explained that, as a member of the public, she noticed several articles over the prior six months about the viability of grout and questions of why the Site was not using it. Additionally, the National Academies of Sciences was also examining the topic. As the Site

was getting closer to making glass, she felt that the HAB should start discussing grout as well, including topics such as its chemistry and viability, noting that alternative measures were always in the cleanup plans. She felt that it was worthwhile for the Board to educate itself on the topic, even if it did not result in advice in the near future.

Dan Solitz was interested in the progress of the Test Bed Initiative (TBI) and its future, noting that it was related to grout. Rob agreed that the results of TBI needed to be better understood. He felt it was well understood what grout was and how widely available it was, but the regulatory aspects needed to be understood as well. All aspects needed to be well understood in order for the Board, the states of Washington and Oregon, or other interested parties to determine the viability of grout as an option for immobilizing waste. He felt the group needed to explore what information that the stakeholders needed to know about that subject.

Pam Larsen, Benton County, stated that Washington was concerned that its waste would be grouted and then would not leave the state. She expected that the solution to that would be to only permit grout in batches. Rob agreed and wondered if there was a means to show that grout was of similar risk to vitrified waste.

Tom Sicilia noted that one of the things that the National Academies was considering as part of its study was offsite shipment for grout. He suggested waiting until the report was finished before discussing it, as that would provide a strong baseline for discussion. He noted that the TBI was a small batch test.

Rob explained that under the TBI, the Site was planning to ship approximately 2,000 gallons of low-activity waste (LAW) for disposition in Texas. He wondered why it seemed to have stalled.

Susan Coleman stated that, through the National Academies report would ultimately be needed for the Board to have a complete understanding of the option and its ramifications, the Board could proceed with its own data gathering, request presentations from the agencies, and gain an understanding of the associated challenges. Ultimately, it could determine what potential advice it would like to consider.

Ruth noted that neither TBI nor grout was in the draft fiscal year 2023 HAB work plan. She suggested that the committee consider what it should ask its IM team to do in order to further the conversation.

Jacob Reynolds, Non-Union, Non-Management Employees, expected that the HAB would a difficult time achieving consensus on a product related to grout. He stated that, though he was not a “grout guy,” he did understand some of the things being discussed as a result of his background in tank waste chemistry. He explained that “grout” as it was used was a very generalized, “catch-all” term, likening it to calling something a “mammal,” which could range in magnitude from a mouse to an elephant. Though there were some similarities, there were tremendous differences as well. While he supported some applications, there were others he would be strongly against. He explained that there was a wide range of conditions to consider within the catch all of grout. Chemically, there were many different types of cement and many different types of things that could be held together with it, and within that, there was potentially some application suitable for Hanford. He cautioned the committee not to get caught up in the word grout and expect that it could have a universal application, as he did not believe that to be true.

Chris Sutton recalled his experience at the Fernald Site during its grouting efforts. He explained that, through that process, it was learned that many of the grout formulations did not work at a larger scale. There was a series of problems encountered that were not present in the smaller scale studies. He thought it would be worth examining how the Fernald Site gained state approval for grouting as well, as he expected that Ohio had many of the same concerns that Washington did.

Tom Sicilia wondered if TBI was “tied up” with ongoing holistic negotiations, which could contribute to the perceived delay. Ryan Miller, Ecology, stated that he was unsure if it was related to holistic negotiations, but stated that if the HAB was interested in getting Ecology perspectives, he could take that request back to management.

Steve Anderson felt that the committee should try to get subject matter experts to speak on the matter.

Rob stated that DOE had been directed by Congress to immobilize the waste for geologic disposal. It was a fundamental goal of the Hanford Site. He wondered if the questions around grout could be approached from the perspective of showing that the waste can be immobilized with something other than glass for its period of radioactivity.

Tom felt that would result in something closer to a dissertation than advice, stating it would require “in the weeds” definitions beyond the HAB’s purview. Rob felt that, depending on the what the related studies show, the answers may be self-evident.

Susan Coleman stated that, from the public’s perspective, it seemed like a viable option, and it was consistently being asked why the Site was not utilizing it.

Rose Ferri, Yakama Nation, wondered how one would define success in grouting.

Susan Colman expected that Ecology’s position on grout may change as DFLAW operations were getting closer to starting. She expected that trust was likely a factor and historically Ecology did not want DOE to “ditch vit,” but that was no longer an expectation.

Dan Solitz stated that he would like to learn the status of DOE’s TBI application, including Ecology’s perspective on it.

Tom suggested that the next TWC meeting could include a look at the related National Academies Report.

Committee Business

The committee reviewed the status of its IM teams to determine the path forward. Rob Davis hoped to ensure that the committee had its most important issues covered.

For the lateral flow focused IM team, Rob explained that Vince Panesko, a former HAB member, led much of that work, focusing on collected data on water dispersion resulting from dumping and how it resulted in transport of radionuclides. Now that less water dumping occurs, it was less of a concern. The remaining goal the IM team could have, he stated, was to encourage DOE to use that concept in its models, should it become relevant. He thought that the River and Plateau Committee (RAP) would be best suited to lead that goal.

Tom Sicilia expected that it was a subject that would keep coming back but did not expect that a white paper be developed. He stated that advice would be something that the agencies are already doing, as documented in the Administrative Record. He suggested keeping lateral flow in their hearts but letting the IM team go.

The committee felt that the 242-Evaporator was a critical piece of hardware to accomplish the mission. Rob felt that grout was of considerable interest, and noted that tank integrity was an ongoing topic, as the committee just received a presentation on the topic. He felt that each of those three IM teams were important to the committee. He considered other potential IM teams for the future around emerging issues, providing the example that the cesium and strontium capsules needed to be well understood.

Rob stated that, before Bob Suyama stepped down as TWC chair, he noted that he wanted to learn more about the DFLAW operations. Chris Sutton noted that he heard in a previous presentation that there were something like 25 operational steps that needed to occur for success. He thought that would be good for the committee to learn more about how those would be controlled and synchronized, day-in and day-out for the next several decades. Gary Younger stated that the information would be part of a “day in the life of DFLAW Operations” presentation that was presently being planned.

Jacob Reynolds stated that, in regard to the grout IM team, he heard a lot of positivity around grout within the committee, but that there were some seats on the HAB that were likely against its use. He suspected that many of the concerns for it were around cost and timing in relation to the mission and existing infrastructure reliability. He wondered if there could be a separate IM team that could be focused on collecting HAB member concerns on what the future mission ought to be. The IM team could think about improvements to the tank waste treatment mission, separately from the grout IM team, but utilizing some of the information learned about grout.

Ruth Nicholson asked, looking forward to February, what would the committee like to discuss that might lead it toward a HAB product? Mike Berkenbile noted that decisions around grout and tank waste treatment had a long-term focus. He suggested that the committee also consider when the right time for information presentation might be and how that fit into the long-range objective of a product, which was not yet defined.

It seemed to Tom that there had requests for discussion on grout by the Board for a long while and a lot of items ripe for discussion were upcoming, such as the National Academies report. He felt that a “perfect storm” for grout discussion was upcoming, and it would be easier to determine a path forward once that was held.

Ruth wondered about means of designing a conversation that would be candid enough to answer the committee’s questions, while not overstepping any concerns that the TPA agencies might have with the discussion.

Rob wondered if a *System Plan 10* discussion might have enough parallels on the topic. Jacob did not expect that the document would have the types of answers the committee was looking for on grout.

Dan Solitz suggested that the committee would benefit from an understanding of the testing, technical readiness, and formations of grout.

Ruth asked the agencies if a “grout 101” topic would be feasible for the committee’s February meeting. Ryan Miller stated that, so long the topic was not part of holistic negotiations, Ecology representatives would be able to discuss the topic.

Jacob recalled previous discussions on the topic from Ecology’s perspective. He felt that Ecology provided some good questions that needed but he had not heard a response from DOE on those questions. Instead, DOE’s approach instead of answering directly, was to go to other sources for further study, such as the National Academies. He expected that everyone would be interested in learning each agency’s perspective and answers to one another’s questions. He thought about the Board’s ability to reach common ground through back-and-forth discussion. Ruth noted that there were many potential Board products that did not require consensus, such as sounding board activities where thoughts and concerns were collected from all participants.

Mike reiterated his earlier thought. Given that there was new information on grout forthcoming, he wondered if February was too soon to begin presentations on grout. He suggested that, instead, the

committee could use that time to shape its questions so that when such presentations were held, those could add value.

Susan Coleman noted that *System Plan 10* was an item in the work plan for May. For February, she suggested the Hanford Integrated Tank Disposition Contract (ITDC) follow up as a topic. Mike provided a link to the ITDC procurement website (<https://www.emcbc.doe.gov/SEB/HanfordITDC>), explaining that due to sensitivity in procurement, there were significant limitations on what could be discussed.

Other Topics

Rob encouraged the committee and IM teams to utilize their channels in Microsoft Teams to maintain communication between meetings.

Rob also noted that he had been paying attention to the permit modifications to the Waste Treatment Plan. He had asked Ryan to put together a list of items that might involve permitting in relation to tanks so that the committee could review those and stay on top of those topics.

Meeting Recording

<https://youtu.be/2MsdZ3qgbc>

Attachments

[Attachment 1: Deputy Designated Federal Officer Slide](#)

[Attachment 2: Meeting Agenda](#)

[Attachment 3: Draft April 2022 TWC Meeting Minutes](#)

[Attachment 4: HAB Issue Manager Team List](#)

[Attachment 5: DOE Presentation – Tank Integrity and Monitoring Program](#)

Attendees

Board Members and Alternates:

Dan Solitz, Primary*	Jacob Reynolds, Primary*	Rob Davis, Primary*
Steve Anderson, Primary*	Susan Coleman, Primary*	Chris Sutton, Alternate*
Marissa Merker, Alternate	Pam Larsen, Alternate*	Simone Anter, Alternate
Tom Sicilia, Alternate*		

Others:

Erik Nelson, DOE*	Ambika Chakravartty, Ecology	Dana Cowley, HMIS
Gary Younger, DOE*	Ginger Wireman, Ecology *	Debbie Kelley, HMIS
Jennifer Sands, DOE*	Jim Alzheimer, Ecology*	Debra Yergen, HMIS*
Mike Berkenbile, DOE*	Nina Menard, Ecology*	Patrick Conrad, HMIS
Ricky Bang, DOE	Ryan Miller, Ecology *	Dan Baide, WRPS

	Tom Rogers, WDOH	Destry Henderson, WRPS
		Joan Lucas, WRPS
		Ruben Mendoza, WRPS
		Matt Hendrickson, ODOE
		Jeff Wyatt, OHCUB
		Thomas Brouns, PNNL
		Li Wang, YN ERWM
		Rose Ferri, YN ERWM
		Derek Micell
		Sally Smith
		Susan Leckband*
		Todd Myers
		Wesley Bryant
		Josh Patnaude, Facilitation*
		Lacey Mansius, Facilitation*
		Olivia Wilcox, Facilitation
		Ruth Nicholson, Facilitation*

** denotes that the individual was signed-in or otherwise noted as an in-person attendant*

Note: Participants for this virtual meeting were asked to sign in with their name and affiliation in the chat box of Microsoft Teams. Not all attendees shared this information. The attendance list reflects what information was collected at the meeting.